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Applying pedagogies to wicked problems in Geography

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Wednesday 31\textsuperscript{st} August 2016
Royal Geographical Society-IBG, London
Structure of talk

• Define wicked problems
• Examples of wicked problems
• What makes wicked problems difficult to (a) research and (b) teach?
• What are the opportunities and challenges to staff and students undertaking research and/or teaching?
• Translating research to pedagogies for wicked problems
• New positionality for Geography?
  – Inter-disciplinary collaboration
  – Liberalisation of the university curriculum
  – Communities of practice
• Encouraging creativity and imagination is the new (existing?) geography!
Defining wicked problems

“A class of problems that are complex, contentious, defy complete definition and resolution, and for which there is no single solution, since any resolution generates further issues.” (Rittel & Webber, 1973, p.4)

“… such problems are not morally wicked, but diabolical in that they resist all the usual attempts to resolve them.” (Rittel & Webber, 1973, p.4)

“Are characterised by high degrees of scientific uncertainty and lack of consensus, for which there are currently no correct or optimal solutions, but which require planners and politicians to make decisions.” (Brown et al., 2010)

“Those resistant to resolution because of incomplete, contradictory, and changing requirements. Surrounding demands are often difficult to recognize; moreover, because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems.” (Langellier, 2013)

“Wicked problems have no technical solution, it is not clear when they are solved, and they have no right or wrong solution that may be determined scientifically. Instead, for wicked problems governance must rely on the collective judgment of stakeholders involved in a process that is experiential, interactive and deliberative.” (Jentoft & Chuenpagdee, 2009, p.553)
Examples of wicked problems

- Climate change
- Global poverty
- Food insecurity
- Biofuels
- Space junk in orbit
- Plastics littering oceans
- Overfishing
- Coral reef decline
- Urban inequality
- Global terrorism
- Sustainable futures
- Troubled families
- Provision of rural schools
- Housing markets in impoverished areas

“Since wicked problems are part of the society that generates them, any resolution brings with it changes in that society.” (Brown et al., 2010, p.4)
The properties of wicked problems
(adapted from Duckett et al., 2016; Rittel & Webber, 1973; Jordan et al., 2014)

1. Indefinable (and non-generalizable)
2. Ambiguously bounded
3. Temporally exacting
4. Repercussive
5. Doubly hermeneutic
6. Morally consequential
Applying to and facilitating research
(Brown et al., 2010; Jordan et al., 2014)

- Collaboration between different researchers
- Integration of stakeholders
- Different ways of thinking
- Using imagination, creativity
- Be receptive to new ideas and new directions
- Exploring all investigative avenues
- Respect other ways in which we construct knowledge
- Drawing upon others’ intellectual resources
- Overcoming academic silo mentality, crossing disciplines
- Overcoming communication issues associated with idiosyncratic technical language and practices
- Often adopt holistic perspective
- Multi-disciplinary versus inter-disciplinary versus trans-disciplinary
- Open, transdisciplinary modes of inquiry
Translating research to effective pedagogy (1)

What skills do we need our students to develop?

– Openness of dialogue with others from outside your subject area
– To acknowledge and empathise with different perspectives
– To utilise different knowledges and technical skills
– To be able to handle complexity and uncertainty
– To be resilient when faced with setbacks and obstacles that inevitably arise
– To stimulate imagination and creative thinking
Translating research to effective pedagogy (2)

Opportunities and challenges

- The practicalities of translating research into effective teaching
- Facilitation of small, multi- or trans-disciplinary teams, tapping into diverse expertise
- Using multiple methodologies in teaching
- Using effective learning and teaching approaches
- Inter-disciplinary collaboration between university departments
- Stimulating imaginations, creativity and critical thinking
Translating research to effective pedagogy (3)

1. Research-informed teaching
2. Using case studies (Davidson & Lyth, 2012)
3. Inquiry- and problem-based learning (Brown, 2010; Davidson & Lyth, 2012)
4. Adaptive learning and self-reflection, e.g. learning journals (Davidson & Lyth, 2012)
5. Transformative learning theory (Haigh, 2014)
6. Transdisciplinary team formation (Norris et al., 2016)
7. Problem-exploring through team practice, e.g. video production (Van Kooten & Berkley, 2016)
8. Engaged scholarship, working with stakeholders (Dentoni & Bitzer, 2015; Paynter, 2014)
9. Service-based learning (Cantor et al., 2015)
Teaching example: ‘Climate Change & Sustainability’ at Bath Spa University

Remit:

• *Either:* Write a consultancy report that outlines the likely impacts of climate change on the Somerset Levels.

• *Or:* Write a report for Bath and North East Somerset Council outlining potential climate change mitigation options that a named city of Bath could pursue over the next twenty years.

L&T strategy:

• Self-selected groups of 4 students; group report of 2,000-2,500 words; supported by informal workshops and field day (Somerset Levels); peer assessment element

Assessment criteria:

1. clear conceptual understanding social, economic, and policy implications of climate change.

2. ability to appraise and assess appropriate scientific, social scientific and/or policy literature, and clearly communicate its findings/results.

3. clear and succinct report written in accessible language, appropriate to the target audience.
Issues of inquiry-based approach

• Establishing multi-disciplinary teams
• Group dynamics
• Compartmentalisation of writing
• Limited collaborative discussion and editing
• Is transdisciplinarity attainable? Not sufficiently diverse subjects
• Lack of technicality or discursive application
• Superficiality in critique and evaluation of options
• Lack of basic global awareness, poor geographical knowledge
• Need to better engage in wider reading and to learn to critically analyse sources
• Too challenging for Level 5 (Year 2)?
• But better-performing groups show creativity and critique
The positionality of Geography

- Administrative reorganisation of Geography (Hall et al., 2015)
- Integration of physical and social sciences
- Evolution into Liberal Arts?
- What role should Geography play?
- Evolving communities of practice – research impact
- ‘Graduateness’ and employability - training of future decision-makers
- Engaged scholarship combines the work of universities with that of community partners (Paynter, 2014)
Example: Sustainability in Life and Work – Open Module at Bath Spa University

(adapted from: Mears, R., Wiffen, C. & Schaaf, R., 2016, Introduction to open and shared modules, presented at Staff Development Day, Bath Spa University: 5th July 2016)

• A thematic, multi-disciplinary module exploring sustainability from numerous subject and policy positions

• Example topics:
  – Climate Change; Managing an EcoCampus; Corporate social responsibility; Happiness agenda; Ethics and justice; Waste management; Biodiversity and ecosystems; Sustainability and heritage; Sustainability in Shakespeare’s worlds; Environmental citizenship

• Assessment:
  – Multiple-choice tests (30%)
  – Creative project (artefact and summary) (40%)
  – Group presentation (30%)
Conclusions

- Geography is no stranger to researching and teaching wicked’ problems and nexus thinking.
- The diversity of skills and knowledge possessed by geographers means they are well placed to contribute to wicked problems.
- Our institutions/curricula are increasingly requiring that students are able to deal with wicked problems.
- Maintaining a balance between (technical) specialization and open critical inquiry.
- Enabling and making our students aware of their skills (employability and ‘graduateness’).
- Geography is in a good position to make important contributions to multi-/inter-disciplinary research and teaching, and to the liberalisation of curricula.
References


